CLAIMS

I claim:

1. A system for detecting an edge of an unimaged printing plate mounted on a platesetter for imaging the printing plate, the system comprising:

an external drum for supporting said unimaged printing plate;

a moveable assembly comprising:

a light source directing light generally normal to said drum; and

a light sensor for detecting reflected light originating from said light source; and

at least one groove formed into said drum for preventing light from said light source, from being reflected towards said light sensor.

2. The system of claim 1 wherein said light source directs a beam of light toward said drum at an angle between about 83 degrees and 90 degrees with respect to said drum.

3. The system according to claim 1 wherein said at least one groove is formed parallel to a longitudinal axis of said drum.

4. The system according to claim 3 wherein a cross sectional shape of said at least one groove is generally square.

5. The system according to claim 3 wherein a cross sectional shape of said at least one groove is generally rectangular.

6. The system according to claim 3 wherein the width of said at least one groove is between about 1 mm and about 2 mm.

7. The system according to claim 3 wherein said at least one groove further comprises an antireflective layer deposed on at least a portion of an inside surface of said at least one groove for reducing the amount of light reflected from the inside of said at least one groove.

8. The system according to claim 7 wherein said antireflective layer is selected from the group consisting of black velvet, black plush, black cloth, black paint, and black oxide.

9. The system according to claim 7 wherein said antireflective layer is a black polymer.

10. The system according to claim 7 wherein said antireflective layer contains a chromophore having a peak absorption wavelength substantially the same as said light source.

11. The system according to claim 3 wherein said at least one groove extends along the entire length of the portion of said drum operative to support said plate.

12. The system according to claim 1 wherein said at least one groove has a geometric cross section for directing light from said source, that is incident upon said at least one groove, away from said light sensor.

13. The system according to claim 12 wherein said at least one groove has a bottom surface positioned at an angle of about 120 degrees from a first side of said at least one groove and wherein said bottom surface is positioned at an angle of about 60 degrees from a second side of said at least one groove.

14. The system of claim 1 wherein two grooves are formed diagonally across said drum for detecting a skewed plate, each groove containing an antireflective layer deposed on at least a portion of an inside surface of said grooves.

15. The system of claim 1 wherein said light sensor provides an electrical signal having at least two different voltage levels corresponding to 1) detected light reflected from said plate and 2) light reflected from said groove.

16. An apparatus for detecting an edge of imagable media mounted on a support surface of an imagesetter or a platesetter, said apparatus comprising:

a moveable assembly comprising:
a light source radiating light toward said surface; and
a light detector for detecting light from said light source; and

at least one groove formed into said support surface for preventing light from said source from being directed toward said detector.

17. The apparatus of claim 16 wherein said support surface is an internal surface or an external surface of a drum.

18. The apparatus of claim 16 wherein said at least one groove extends along the entire length of the portion of said drum operative to support said plate.

19. The apparatus of claim 17 wherein said at least one groove is parallel to an axial direction of said drum.

20. The apparatus of claim 19 wherein said at least one groove further contains an antireflective layer deposed on at least a portion of said at least one groove for reducing the amount of light reflected from said at least one groove, toward said light detector.

21. The apparatus of claim 20 wherein said antireflective layer is selected from the group consisting of black velvet, black plush, black cloth, black paint, black oxide and black polymer.

22. The apparatus of claim 19 wherein said at least one groove has a geometric cross section for directing light from said source, that is incident upon said groove, away from said light detector.

23. The apparatus of claim 22 wherein said at least one groove has a bottom surface positioned at an angle of about 120 degrees from a first side of said at least one groove.

24. The apparatus of claim 23 wherein said bottom surface is positioned at an angle of about 60 degrees from a second side of said at least one groove.

25. The apparatus of claim 16 wherein said at least one groove is formed parallel to a long direction of said support surface for detecting a skewed plate, said at least one groove containing an anti-reflective material deposed on at least a portion of an inside surface of said at least one groove.

26. The apparatus of claim 17 wherein two grooves are diagonally formed into said support surface of said drum for detecting a skewed plate, each groove containing an anti-reflective material.

27. A method for detecting an edge of an imageable plate mounted on an external drum of a platesetter for imaging printing plates, the method comprising:

providing a moveable assembly comprising:
a light source;and
a light sensor responsive to light from said light source;

providing a groove formed into an outside surface of the external drum, said groove having an anti-reflective layer deposed on an inside surface of said groove;

illuminating a portion of said groove with light from the light source, said light applied generally normal to said groove;

detecting an absence of said light reflected from said groove;

said absence of reflected light from said groove corresponding to a first signal level generated by said light sensor;

moving said light source along said groove;

detecting light reflected from the imageable plate mounted over a portion of said groove in response to said light from said light source illuminating a portion of the plate as said light source passes over the plate;

said reflected light corresponding to a second signal level generated by said light sensor; and

said edge of the imageable plate being detected when a difference between said first and said second signal levels exceed a predetermined value.

28. A method of detecting a skewed printing plate mounted on an external drum of a platesetter for imaging printing plates, the method comprising the steps of:

providing a moveable assembly comprising:
a light source;and
a light sensor responsive to light from said light source;

positioning said moveable optical assembly at an end of said drum, over a first groove longitudinally formed into said drum;

illuminating a portion of said first groove with a beam of light from said light source, said light beam applied generally normal to said first groove;

detecting an absence of light reflected from said first groove;

said reflected light from said first groove corresponding to a first signal level generated by said light sensor;

moving said optical assembly along a path parallel to said first groove while monitoring a first spatial position of said light source;

detecting light reflected from a printing plate mounted over a portion of said first groove in response to said beam of light from said light source illuminating said plate as said light source passes over said plate;

said reflected light from said plate corresponding to a second signal level generated by said light sensor;

recording a first position of said moveable light source when a first difference between said first and said second signal levels exceeds a first predetermined value;

positioning said moveable optical assembly at said end of the drum over a second groove formed into said drum, said second groove formed parallel to said first groove;

illuminating a portion of said second groove with said beam of light from said moveable light source, said light beam applied generally normal to said second groove;

detecting an absence of light reflected from said second groove;

said absence of reflected light from said second groove corresponding to a third signal level generated by said light sensor;

moving said optical assembly along a path parallel to said second groove while monitoring a second spatial position of said light source;

detecting light reflected from said printing plate mounted over a portion of said second groove in response to said beam of light from said light source illuminating said plate as said light source passes over said plate;

said reflected light from said plate corresponding to a fourth signal level generated by said light sensor;

recording a second position of said moveable light source when a second difference between said third and said fourth signal levels exceeds a second predetermined value; and

calculating a third difference between said first position and said second position and determining if said third difference exceeds a third predetermined value indicating a skewed printing plate is mounted on said drum.